

PATENT CLAIMS:

1. Process for the treatment of fresh meat, in particular for preserving fresh beef, pork, veal, lamb, game, poultry, horsemeat, fish, raw sausage and ham, in which the fresh meat is stored for a presettable time at a superatmospheric pressure in an air-tightly sealable space after supply of oxygen in an atmosphere essentially consisting of oxygen, characterized in that, during the supply of the oxygen, its temperature is selected such that, and the feed rate is set or controlled to be low enough that, the fresh meat does not freeze, in that the pressure during the storage is selected to be high enough, and the storage time long enough, so that the fresh meat is completely penetrated by oxygen, and in that, during the removal of the oxygen, the removal rate is set or controlled to be low enough that, firstly, the fresh meat does not freeze and, secondly, the oxygen permeating the treated fresh meat is removed from the fresh meat without bubble formation.
2. Process according to Claim 1, characterized in that during the storage there is no supply and removal of oxygen and/or in that the fresh meat is treated in sliced pieces, in particular in consumer portions and/or in that, during supply of the oxygen the pressure present within the sealed-off space is measured and, after reaching a preset maximum pressure, the oxygen supply is terminated.
3. Process according to ~~one of the preceding claims~~, characterized in that the oxygen atmosphere in the sealed-off space is brought to a pressure of approximately 10 to 20 bar, in particular approximately 13 to 17 bar,

preferably approximately 15 bar and is maintained during the storage time and/or in that, during supply of the oxygen, the pressure is increased in an essentially linear manner, in particular continuously or in a plurality of steps, preferably between 10 and 20, in particular in approximately 15 steps, and/or in that the oxygen is supplied within approximately 45 minutes to 4 hours, in particular within approximately 1 to 3 hours, preferably within 1 to 2 hours, in particular continuously.

a 4. Process according to ~~one of the preceding claims~~,
characterized in that
15 in a space having a volume of approximately
100 liters, a maximum of approximately 70 liters
of oxygen per minute, in particular a maximum of
approximately 30 to 60 liters of oxygen per
minute, or less, are supplied and/or in that in
20 the case of a space having a volume of
approximately 15,000 liters, a maximum of
approximately 2500 liters of oxygen per minute are
supplied, advantageously a maximum of
approximately 1400 liters of oxygen per minute, in
25 particular a maximum of approximately 1200 liters
of oxygen per minute or less.

4 5. Process according to ~~one of the preceding claims~~,
characterized in that
30 the storage time is selected to be approximately 5
to 15 hours, in particular approximately 7 to 12
hours, preferably approximately 8 to 10 hours,
and/or in that the storage time in the case of
meat stored in advance is selected to be shorter
35 than in the case of freshly slaughtered meat.

6. Process according to ~~one of the preceding claims~~,
characterized in that

during removal of the oxygen the pressure is decreased essentially linearly, in particular continuously, or in a plurality of steps, preferably between 10 and 20, in particular in approximately 20, steps and/or in that during removal of the oxygen, essentially the same time, in particular approximately 8 to 20 minutes, preferably approximately 13 to 16 minutes, is provided per bar of pressure decrease.

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7. Process according to ~~one of the preceding claims~~,
characterized in that
after reaching a preset minimum pressure of
preferably between approximately 0.5 and 1.2 bar,
in particular approximately 0.7 bar, this pressure
is removed at a higher gradient.

8. Process according to ~~one of the preceding claims~~,
characterized in that
20 the oxygen is removed within approximately 1 to 4
hours, in particular within approximately 3 hours,
and/or in that the supply and/or removal of the
oxygen is carried out via a controllable inlet or
outlet valve.

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4 9. Process according to Claims ~~7~~ and 8, characterized in that after reaching the minimum pressure, the outlet valve is essentially completely opened and/or a further outlet valve having a large orifice cross-sectional area is opened.

a 10. Process according to ~~one of the preceding claims~~,
characterized in that
35 the oxygen is supplied to the sealed space without
prior removal of the gas mixture corresponding to
the ambient atmosphere or in that, prior to supply
of the oxygen, the gas mixture corresponding to
the ambient atmosphere present in the sealed space

is removed as far as the generation of a preset reduced pressure.

- a 11. Process according to ~~one of the preceding claims~~,
5 characterized in that
the oxygen supplied has a degree of purity of at
least 50%, in particular at least 90%, preferably
at least 95% and/or in that the oxygen atmosphere
10 during the storage has a degree of purity of at
least 50%, in particular at least 90%, preferably
at least 95%.
- a 12. Process according to ~~one of the preceding claims~~,
characterized in that
15 the fresh meat is introduced into the sealable
space in the chilled state, in particular at a
temperature in the range from approximately 0°C to
3°C and in that the temperature in the sealed
space is maintained during the storage, preferably
20 in a range of approximately -5° to +3°C.
13. Apparatus for carrying out the process according
to ~~one of the preceding claims~~,
characterized by
25 a housing (1) in which are provided an air-tightly
sealable opening (2) for introducing/removing the
fresh meat (29) on a carrier rack (23), an inlet
orifice (10) which can be connected to at least
one oxygen supply (14, 12) and opens out in
30 particular on the ceiling side and at least one
removal orifice (15) which is arranged in
particular on the ceiling side, and ensures a
defined outflow from the interior of the housing
(1).
- 35 14. Apparatus according to Claim 13,
characterized in that,
on the inlet orifice (10) for supplying oxygen, a
controllable supply valve, in particular a

solenoid valve (4) is provided, via which the oxygen supply rate per unit time and/or supply velocity can be controlled, and/or in that at the removal orifice (15) for removing the high-pressure oxygen atmosphere, a controllable removal valve, in particular a solenoid valve (6), is provided, via which the oxygen removal rate per unit time and/or the removal velocity can be controlled.

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- a 15. Apparatus according to ~~one of Claims 13 or 14~~, characterized in that an electronic control unit (9) is provided, via which the orifice cross-sectional area of the supply valve (4) and/or the removal valve (6) can be controlled, and/or in that the housing (1) is constructed to be rectangular or cylindrical, with the opening (2) for introducing/removing the fresh meat (29) being provided in each case in the ends of the housing (1).

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- h 16. Apparatus according to ~~one of Claims 13 to 15~~, characterized in that , for the air- and pressure-tight sealing of the housing door (3), a bayonet closure is provided and/or in that for the air- and pressure-tight sealing of the orifice (2) via the housing door (3) a bayonet closure is provided and/or in that the oxygen is supplied via an oxygen distribution apparatus disposed within or outside the housing (1), which distribution apparatus consists in particular of tube elements arranged in a star shape, i.e. radially spaced.

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- 35 17. Apparatus according to ~~one of Claims 13 to 16~~, characterized in that the housing (1) for removing the gas mixture corresponding to the ambient atmosphere has an evacuation orifice (32) preferably disposed on the

5 ceiling and/or in that to store oxygen an oxygen tank (14) disposed outside the housing (1) is provided, which tank is connected to the inlet orifice (10) in particular via an oxygen vaporizer (12) and via a pipe (11, 13) which can be closed by means of the solenoid valve (4).

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